

REMARKS

Claims 1-42 are currently pending in the application. The following remarks are responsive to the Examiner's objections and rejections in the Final Office Action dated January 5, 2005. In that Office Action, the Examiner rejected claims 1-42, and objected to claims 18-20 and 36-38. Claims 1, 21 and 39 have been amended herein.

The Applicant would like to thank the Examiner for the courtesy of the interview conducted on March 30, 2005. The interview served to provide a clearer understanding of the nature of the Examiner's objections and was helpful in moving prosecution of the present application forward.

The Examiner objected to claims 1, 21, and 39 under 35 U.S.C. 112, second paragraph. Specifically, the Examiner requested clarification regarding the recited "second knowledge."

Independent claims 1, 21 and 39 each refer to at least one or a "knowledge base having data stored therein representing first knowledge about a plurality of objects using a plurality of relationships between pairs of the objects." An exemplary implementation of such a knowledge base is described in the present specification beginning at line 20 of page 10. The nature of objects is described in pages 10-15. The nature of the relationships between the objects is described in pages 15-24. A summary of these basic concepts is provided beginning at line 15 of page 24.

The present specification also clearly describes and enables exemplary algorithms for processing user queries. For example, as stated in the description of Fig. 8 beginning at page 56, line 1, query processing system 806 "answers queries in internal format using knowledge stored in knowledge base 808 *and also knowledge inferred by the knowledge inference system 810. The knowledge inference system infers new knowledge with the help of a store of generators 812.*" This stand-alone embodiment also includes a natural language translation system 814 which translates natural language by referring to a store of translation templates 816" (emphasis added).

The nature of queries, and the generation and processing of queries are described beginning at page 26, line 5. The role played by so called “smart” and “dumb” generators in the generation and processing of queries, and in the inference of new knowledge in responding to queries is described beginning at page 33, line 6.

The foregoing portions of the specification provide clear descriptions of exemplary embodiments of the present invention in which “second knowledge not represented in the at least one knowledge base” is inferred from first knowledge stored in the knowledge base “in response to a query having a predetermined format.” That is, the second knowledge to which the claims refer is not statically or explicitly represented in the knowledge base. Rather, it is dynamically generated from the first knowledge in response to queries applied to the knowledge base. In view of the foregoing, the objection to the claims under 35 U.S.C. 112, second paragraph, is believed addressed.

Notwithstanding the foregoing, claims 1, 21, and 39 have been amended to more clearly describe the invention. Specifically, each of the independent claims have been amended to recite that “the first knowledge about a plurality of objects” is represented “using a plurality of relationships between pairs of the objects and temporal data representing temporal validity for at least some of the relationships.” In addition, in response to the Examiner’s objection to the term “infer”, each of the independent claims has been amended to recite that the second knowledge is “generated” rather than inferred from the first knowledge. These amendments are being presented for clarification purposes only and not for any reason related to patentability.

The Examiner rejected claims 1, 2, 4-17, 21-35, and 39-42 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,263,335 (Paik). The Examiner also rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Paik in view of U.S. Patent No. 5,809,493 (Ahmed). The Examiner referred specifically to columns 5 and 6 of Paik as disclosing the invention as recited in independent claims 1, 21 and 39. The rejections are respectfully

traversed.

Paik describes an “information extraction system that allows users to ask questions about documents in a database,” which “automatically builds its own subject knowledge base,” and can dynamically “acquire new knowledge and add it to the knowledge base by automatically identifying new names, events, or concepts.” See Abstract. According to Paik, the system “allows the expression and clarification of complex query statements and the retrieval and display of relevant information from documents using natural language processing (NLP) techniques.” Column 4, line 66 to column 5, line 2. The system extracts information from news articles and news feeds and creates chronologically ordered summaries of such articles and news items which may then be retrieved either in response to user queries (e.g., Who-What-When-Where-Why-How (W-H) questions), or the browsing and selection of hyperlinks in representations of the summaries themselves. Column 5, lines 3-13. Paik indicates that his system “goes beyond document boundaries to extract and summarize the contents of an entire collection of documents,” aggregating “information across document boundaries.” Column 5, lines 41-44.

Paik does not describe a system which is operable “in response to a query having a predetermined format” to infer or generate “second knowledge not represented in the at least one knowledge base” from “first knowledge” which is represented in the at least one knowledge base as recited in claim 1. Merely because the information extraction techniques described in Paik go “beyond document boundaries,” it does not follow that inferences are being made from the information stored in the knowledge base in response to a query to generate knowledge not previously represented. To the contrary, as described in column 5, Paik processes each document or news item received *prior* to and as a condition precedent to its inclusion in the document knowledge base, and *prior* to responding to any queries which might correspond to the document. See column 5, lines 41-51. Thus, Paik’s processing is not with reference to

information represented in the knowledge base, but with reference to information which is yet to be represented. Secondly, Paik's processing is not done in response to queries, but as part of the process of summarizing and including documents in the database which can *subsequently* be returned in response to a query.

As described in the present specification at page 33, line 7, "[f]ar more facts exist than can be stored statically. For this reason inference is an important feature of the preferred embodiment." That is, because embodiments of the invention are intended to be able to represent as much of the corpus of human knowledge as possible, an inference capability which dynamically generates information not represented in the system in response to queries is important to avoid the necessity of statically storing all such inferences.

By contrast, the efficacy of Paik's system is predicated on the fact that the information it extracts which "goes beyond document boundaries" must be stored statically in the document knowledge base. While such an approach may be practicable in a system in which the items being summarized and retrieved are a relatively small set of documents, it would break down if a much wider variety of factual knowledge were to be represented as is possible with embodiments of the present invention.

In view of the fact that Paik does not describe a system in which knowledge not represented in a knowledge base is inferred or generated from knowledge which is stored in the knowledge base in response to a query, the rejection of claims 1, 21 and 39 over Paik is believed overcome. In addition, the rejection of any claims dependent on claims 1, 21 and 39 is believed overcome for at least the reasons discussed.

Furthermore, in view of the amendments to claims 1, 21, and 39, further distinctions between the cited art and claimed invention may be identified. That is, each of the claims has been amended to explicitly recite that the first knowledge is represented using "temporal data representing temporal validity for at least some of the relationships" between objects. This is a

limitation which is clearly not shown by Paik.

The Applicant respectfully acknowledges the Examiner's previous indication of allowable subject matter in claims 18-20 and 36-38. However, in view of the foregoing, these claims are believed allowable in their present form without amendment.

In view of the foregoing, Applicant believes all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (510) 663-1100.

Respectfully submitted,
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A handwritten signature in black ink, appearing to read 'Joseph M. Villeneuve', with a long horizontal flourish extending to the right.

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